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Why is soil in Aurora so 'hot'?

Town's lead cleanup grows to more than 200 yards

By Wally Kennedy
Globe Staff Writer

AURORA, Mo. — The sprinkler squirts a stream of water across Wayne and Tammie Doty's front yard, but there's no grass there to water — only straw and seed.

The Aurora couple say they are hopeful some watering now and rain later this fall will transform the color of their yard from yellow to green. Their yard is among the 200 — maybe as many as 250 — in Aurora that are being replaced because they contain too much lead. The lead poses a health risk to children who accidentally ingest it. Research has shown that a small amount of lead can do serious damage to a child's developing nervous system and ability to think.

"Overall, I think they are doing a fine job," said Wayne Doty. "They explained it well, and the contractor has been very accommodating."

Randy Spencer with Shaw Environmental, a contractor working for the Environmental Protection Agency, digs up the topsoil in a residential yard near Adams and Pleasant streets in Aurora.

Earlier this year, the U.S. Environmental Protection Agency came to Aurora to look for lead-contaminated yards and wells because of the town's history of lead and zinc mining at the turn of the century. The EPA found two contaminated wells out of 70 tested, and 17 properties with high levels of lead and cadmium among 100 sampled.

The contamination was found in the northeast part of Aurora, where the EPA was expecting to find it because that is where much of the mining took place from the 1880s to the 1950s.

"We were planning on doing 30 houses," said Bryant Burnett, the EPA's project manager for the Superfund site. "Then, we literally moved around the corner."

The EPA had planned to continue checking yards in Aurora for lead after the initial tests in February. What would be discovered once the inspectors moved around the corner of one street was that virtually every house on the street had high levels of lead in the soil.

"It's mushroomed on us, to say the least," Burnett said.

Mysteries

Some yards are being completely removed. At other houses, only the front yards were found to be "hot." The contractor is scraping about a foot of soil from the surface of the affected yards. It is being replaced with soil from nearby farm fields that has a much lower content of lead.

Burnett said most residents are giving the EPA permission to test their yards for lead and are signing agreements to have the soil removed if it is contaminated.

The soil that is being removed is being placed in Aurora's Baldwin Park, where it is being used to create an earthen berm for a shooting range. It will be covered with clean topsoil and seeded when the removal project winds up later this year.

It is now certain that part or all of 200 yards will be involved in the cleanup. It's possible the number could grow to 250 with further testing. The cost of the cleanup will approach $2 million.

But, there's something puzzling about Aurora's problem with lead: How did it get into the residential soil? And, why is the contamination higher a foot below the surface than it is on the surface?

"It's a mystery that we do not know the answer to," said Burnett. "For us, it really makes no difference how it got there. It's lead, and we need to get it out. But still, it is something of a mystery."

Soil can become contaminated from airborne fallout from a lead smelter. That is how 2,400 yards in northwest Joplin and several hundred yards in Galena, Kan., were contaminated. Smelters owned by Eagle-Picher Industries operated decades ago in those towns. The EPA spent more than $40 million cleaning up those yards.

Yards also can be contaminated by mining wastes. Chat, a gravel-like material that is created when the host rock for the ore is crushed, can contain high levels of residual lead. It has been linked to the contaminated yards at Picher, Okla., where the EPA has a removal project under way.

Burnett said there is no record of a significant smelter operation in Aurora. It is believed the ore was taken to Granby for smelting.

"Aurora once boasted of having the best gravel streets in the state," said Burnett. But the streets now are mostly paved. There is little, if any, evidence of chat in the soil that is being removed.

What is even more puzzling is the discovery of "hotter" soil a foot below the surface soil that was excavated. Because of that, the EPA is requiring that the contractor place an orange plastic barrier on the scraped ground before the new soil is brought in.

Burnett said that is being done to let people in the future know that once they dig below the barrier, they are being exposed to lead-contaminated soil. Such barriers were used in Joplin and Galena, but apparently not to the extent that they are in Aurora.

Dan Ahern, who managed Joplin's yard removals for the EPA, said barriers were used about 25 percent of the time in Joplin.

"What we found in most of those cases is that there was chat in that lower soil," he said. "It is possible the lead in Aurora's soil is naturally occurring. It also could be from backfill or from dust, if their streets were once covered with chat."

Health testing

Burnett said it is possible the yards were contaminated by lead-laced dust from the gravel roads that once existed in Aurora. It also is possible that soil from surface mines in Aurora was used to backfill areas that later would become residential developments.

Whatever the source of the lead, the goal of the project is to reduce the possibility that children will come into contact with the contaminated soil. The cleanup has spurred parents in Aurora to have their children tested for lead poisoning.

Janella Spencer, with the Lawrence County Health Department in Aurora, said: "The number of tests for lead has picked up. In the past, it has been a rare occasion. It's not one of those things you think about every day.

"Since July 1, we have tested 22 kids. Only one of those was elevated. In June, we tested two kids."

A child has lead poisoning if a blood test shows a blood-lead level of 10 micrograms per deciliter. The child in Aurora with the elevated test results had a blood-lead level of 10 micrograms. It is not clear whether the child's lead exposure was due to something related to mining or to lead-based paint, the primary source of lead exposure in children in the United States.

“We are encouraging parents to make an appointment with us, and come in and have their child tested,” Spencer said. “We test children age 6 and under. The state pays for the test.”

To protect children, the EPA checked every day-care center and school yard in Aurora in February. But, the agency was not informed about a Head Start school on the north side of Aurora, where lead mining occurred. That school yard recently was tested and found to be contaminated. It was dug up, and new soil was brought in.

In May, the Aurora R-8 School District was informed that a corner of the practice field at Aurora High School was a hot spot for lead. Members of the marching band and football players were asked to avoid that section of the field while the soil was being removed.